DETAILED ACTION

The finality of the Office action mailed on June 9, 2010 is withdrawn. Claim 6 is cancelled, and claims 1, 5 and 7-17 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites "said second composition comprises boron." However, preceding claim 15 recites "said second composition comprises cerium." Although the claims depend on claim 14, applicant's intention is unclear, based on the scope of claim 1, which recites "compounds of boron and/or cerium."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakada et al. Nakada et al (paragraph 2) discloses a heat exchanger having a number of metal heat transfer surfaces (i.e. external fins) with a hydrophilic layer on both sides thereof comprising nanoparticles of cerium compounds (paragraphs 20 and 29) in a solvent (paragraph 42).

Regarding claims 11-12, Nakada et al (paragraph 46) discloses the hydrophilic layer ranges from 0.05 to 5 μm.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 7-10, 13-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inbe et al in view of Troczynski et al.

Inbe et al (Prior Art and Summary of the Invention) discloses a heat exchanger having a number of aluminum heat transfer surfaces (i.e. fins) having a corrosion resistant layer after-treated with a hydrophilic layer comprising nanoparticles of boron compounds dispersed in polyvinyl alcohol (column 10, lines 17-30) having a contact angle with water of about 20 to 28° (column 12, lines 27-35 and Table 2), but does not disclose the corrosion resistant layer comprising nanoparticles, and the specific layer thicknesses.

Troczynski et al (Example 5) discloses a heat exchanger having an aluminum alloy heat transfer surface with a corrosion resistant layer comprising nanoparticles (i.e. 0.5 μm) of aluminum compounds for the purpose of achieving a desired corrosion resistance.

Since Inbe et al and Troczynski et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Troczynski et al would have been recognized in the pertinent art of Inbe et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Inbe et al the corrosion resistant layer comprising nanoparticles of aluminum compounds for the purpose of achieving a desired corrosion resistance as recognized by Troczynski et al. Further, it would have been obvious to one of ordinary skill in the art to apply a known technique to a known device ready for improvement to yield predictable results. *KSR Int'l Co. v. Teleflex Inc.,* 82 USPQ2d 1385, 1396 (2007).

The specific layer thickness is considered to be an obvious design expedient, producing no new and/or unexpected results and solving no stated problem. One of ordinary skill in the art would employ any layer thickness to achieve a desired strength, longevity, effectiveness or heat transfer.

Regarding claims 7-10, the presence of a method limitation in an apparatus claim bears limited patentable weight in this instance. See MPEP 2113.

Regarding claim 13, the device of the combination of Inbe et al and Troczynski et al discloses the first layer comprise compounds of aluminum, whereas the second layer comprise compounds of boron.

Regarding claim 14, as applied to claim 1 above, the device of the combination of Inbe et al and Troczynski et al meets the instant invention.

Regarding claim 16, as applied to claim 1 above, Inbe et al discloses the second composition comprises boron.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inbe et al in view of Troczynski et al as applied to claims 1, 7-10, 13-14 and 16 above, and further in view of Niemeier et al (WIPO, US 7,416,781 for translation).

The combined teachings of Inbe et al and Troczynski et al lacks the second composition comprising cerium.

Niemeier et al (WIPO)(column 1, lines 21-38) discloses a radiator (i.e. heat exchanger) having a corrosion layer thereon comprising nanoparticles of cerium compounds (column 8, lines 25-49) in aqueous dispersion for the purpose of improving corrosion resistance.

Since Inbe et al and Niemeier et al (WIPO) are both from the same field of endeavor and/or analogous art, the purpose disclosed by Niemeier et al (WIPO) would have been recognized in the pertinent art of Inbe et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Inbe et al nanoparticles of cerium compounds for the purpose of improving corrosion resistance as recognized by Niemeier et al (WIPO).

Regarding claim 17 as best understood, the device of the combination of Inbe et al and Troczynski et al comprises a boron composition, as modified by Niemeier et al (WIPO), with the addition of cerium. Niemeier et al (WIPO) (column 8, lines 25-49) discloses at least one kind of nanoparticles including boron and cerium.

Response to Arguments

The anticipatory rejection of claim 5 in view of Inbe et al is withdrawn in light of the claim amendment.

Applicants' arguments have been fully considered but they are not persuasive.

Applicant's remarks with respect to the combination of Inbe et al and Troczynski et al are not persuasive. The Examiner does not rely solely on the statement of an "obvious design expedient," rather applicant has conveniently disregarded the supporting statement, "One of

ordinary skill in the art would employ any layer thickness to achieve a desired strength, longevity, effectiveness or heat transfer." Applicant does not traverse this latter statement. Furthermore, applicant's statement, "The references of record do not show a heat exchanger having an anticorrosive layer less than [that] or equal as claimed." is incorrect. Applicant's Information Disclosure Statement includes two prior references: Angermann (DE 102 13 756) and Yoon et al, which disclose and teach a layer thickness on heat transfer surfaces within the claimed range for the same purpose as stated by the Examiner.

No further comments are deemed necessary at this time.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ Leonard R. Leo /
PRIMARY EXAMINER
ART UNIT 3785

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